R1002

DECLARATION
RECORD OF DECISION AMENDMENT FOR THE
COLORADO AVENUE SUBSITE GROUND WATER OPERABLE UNIT
HASTINGS Ground Water CONTAMINATION SUPERFUND SITE
HASTINGS NEBRASKA
MAY 1998

I SITE NAME AND LOCATION

Colorado Avenue Subsite
Hastings Ground Water Contamination Site
Adam County Nebraska

II INTRODUCTION

The United States Environmental Protection Agency (EPA) is amending the Record of Decision (ROD) for the Colorado Avenue Subsite of the Hastings Nebraska Ground Water Contamination Superfund Site On September 30 1991 a ROD was issued for the Colorado Avenue Subsite Ground Water Operable Unit (OU) of the Hastings Site located in Adams County Nebraska The ROD presented the interim remedy selected by the EPA for the Ground Water OU which is also known as OU 1 The selected remedy called for capture containment and treatment of the most concentrated portion of the ground water contaminant plume emanating from the subsite The technology identified for the ground water interim action was extraction and treatment (pump and treat) This decision by EPA was preceded in 1988 by completion of the Source Control Interim Action ROD which required soil vapor extraction (SVE) to be implemented in areas where elevated levels of volatile organic compounds (VOCs) were present in the soil

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Although the 1991 ROD for OU 1 contained a number of options for treatment and handling of the ground water certain objections to implementing the selected remedy continued to surface over time As a result of information which developed subsequent to the issuance of the ROD the EPA has determined that a fundamental change to the remedial technology is appropriate The attached amendment to the ROD describes and summarizes the basis for these changes as well as documents certain new information related to conditions at the subsite

The EPA is the lead agency for the site and the Nebraska Department of Environmental Quality (NDEQ) has been designated the support agency The amendment to the ROD is being issued by the EPA with concurrence by the NDEQ

The ROD amendment together with the original ROD presents the selected remedial action for the site This action was chosen in accordance with the Comprehensive Environmental Response Compensation and Liability Act of 1980 (CERCLA) as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA) and the National Contingency Plan (NCP) Section 117 (c) of CERCLA provides that after the adoption of a final remedial action plan if any remedial action is taken or if any enforcement action under Section 106 or 122 is entered into and such action settlement or decree differs in any fundamental respect from such final plans the lead agency shall publish an amendment to the ROD with the reasons such changes were made This ROD amendment will explain these changes to the remedy In accordance with the NCP 40 C F R 300 825 (c) this amendment and the information supporting the decision to amend are part of the administrative record file and are available for public review and comment The administrative record file is available for review at the Hastings Public Library Fourth and Denver Hastings and the EPA Region VII Office Kansas City Kansas

III DESCRIPTION OF THE AMENDED SELECTED REMEDY

The major components of the selected remedy as amended include in addition to the treatment option set forth in the original ROD

- In place treatment of contaminated ground water using several technologies i e air sparging in-well air stripping and monitored natural attenuation The newer ground water treatment technologies known as in situ technologies are also referred to as in ground stripping The technologies incorporated by the amended remedy will not require a point of discharge for treated ground water

- Monitored natural attenuation (MNA) to be applied as a passive remedial technology monitoring the natural phenomen that comprise natural attenuation

- Mass removal and containment to be achieved to the extent required by the 1991 ROD generally defined by the ground water concentration contour corresponding to the trichloroethene (TCE) concentration of 290 micrograms per liter (μg/l) [1] The in situ technologies will expedite mass removal over the pump and treat alternative but may be less effective in containing the plume The in-situ technologies do not extract ground water Instead they strip VOC contaminants

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[1] Other contaminants of concern present in the Ground Water include 1 1 Dichlorethylene (DCE) 1 1 1 Trichloroethane (TCA) and Tetrachloroethylene (PCE) However from analysis of the data it appears the areas containing the highest levels of these other contaminant are within the area defined by the 290 μg/l TCE contour

from the water and recirculate the water back into the aquifer thus removing mass and containing the plume

Ground water monitoring wells to measure the effectiveness of the interim action and the contaminant degradation rates achieved by the MNA technology

Treatment and monitoring of air emissions generated onsite to be treated and any air emissions to be monitored to assure protection of public health The air sparge system would have VOCs captured by the SVE system and treated at a centralized location with granulated activated carbon (GAC) The in well aeration systems would have individual or grouped GAC treatment of VOCs at the well locations

IV STATUTORY DETERMINATIONS

This interim action as amended is protective of human health and the environment complies with the Federal and State requirements that were identified in the original 1991 ROD as applicable or relevant and appropriate requirements for this limited scope action and is cost effective As explained in the attached Decision Summary the selected interim action (the remedy) and all contingency actions defined by the 1991 ROD as amended will satisfy the statutory requirements of CERCLA Although this interim action is not intended to fully address the statutory mandate for permanence and treatment to the maximum extent practicable this interim action utilizes treatment and thus does further that statutory mandate Because this action does not constitute a final remedy for the Subsite the statutory preference for remedies that employ treatment that reduce toxicity mobility or volume as a principal element although partially addressed in this remedy will be addressed by the

final response act on Subsequent actions are planned to fully address the threat posed by the conditions at the subsite Because this remedy will result in hazardous substances remaining on the site above health based levels consistent with Section 121 (c) of CERCLA a review will be conducted to ensure that the remedy continues to provide adequate protection of human health and the environmen within five (5) years after commencement of the remedial action The remedy as revised utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable for the existing site conditions

for Dennis Grams P E — 5/20/98
Regional Administrator — Date
Environmental Protection Agency
Region VII

Attachment
Decision Summary
Responsiveness Summary Attachment A

AMENDMENT TO THE

RECORD OF DECISION FOR THE

COLORADO AVENUE SUBSITE GROUND WATER OPERABLE UNIT

HASTINGS GROUND WATER CONTAMINATION NEBRASKA SITE

Adams County Nebraska

Prepared by

U S Environmental Protection Agency

Region VII

Kansas City Kansas

MAY 1998

Amended Record of Decision
Decision Summary
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DECISION SUMMARY
RECORD OF DECISION AMENDMENT for the
COLORADO AVENUE SUBSITE GROUND WATER OPERABLE UNIT
HASTINGS GROUND WATER CONTAMINATION NEBRASKA SUPERFUND SITE

ADAMS COUNTY NEBRASKA

1 INTRODUCTION

The Colorado Avenue Subsite of the Hastings Ground Water Contamination Site is situated in an old industrial area of Hastings Nebraska and is bordered by commercial and residential properties Hastings is in Adams County which is located in south central Nebraska Because the ground water contaminant plume extends a considerable distance east of the subsite there are a number of private properties which overlie the contaminant plume The main east-west line of the Burlington Northern Railroad borders the subsite on the north Immediately north of the railroad is the Secord Street subsite In addition other Hastings Subsites are situated to the west to the east and to the southeast Regionally the residents are dependent on ground water for their drinking water The aquifer is highly prolific and the general direction of ground water flow is east southeast Apparently some local components of flow deviate from the regional gradient

Manufacturing facilities that occupied 108 S Colorado Avenue at the subsite used degreasing processes that generated solvent waste streams The EPA believes that during several decades beginning in the 1960s releases of hazardous substances into the environment occurred The degreasing operations generated trichloroethene (TCE) tetrachloroethene (PCE) 1 1-dichloroethene (DCE) and trichloroethane (TCA) waste streams

These volatile organic compounds (VOCs) are now found in the soils and ground water at the subsite The United States Environmental Protection Agency (EPA) completed a Feasibility study (FS) in June 1991 and issued a Record of Decision (ROD) in September 1991 The selected remedy in the ROD consisted of among other things extraction and treatment (pump and treat) of the ground water from the most contaminated portion of the contaminant plume

The EPA issued a unilateral administrative order (UAO) to three potentially responsible parties (PRPs) in 1993 One of these PRPs Dravo Corporation (Dravo) has been performing the work required by the UAO While conducting the Remedial Design (RD) activities Dravo petitioned EPA to allow performance of an Air Sparge Test Following the field testing Dravo presented EPA the analytical results and requested that EPA amend the ROD to include in situ treatment technologies such as air sparging and in well aeration as additional selected remedies

2 COMMUNITY RELATIONS

The EPA is issuing this ROD Amendment to meet the public participation provisions mandated under Section 117 of the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986 and 40 C F R § 300 435 (c)(2)(ii) of the National Oil and Hazardous Substances Pollution Contingency Plan NCP)

The proposed plan for this ROD amendment was made available to the public in the administrative record file located at the Hastings Public Library Fourth and Denver Hastings Nebraska and the EPA Region VII Office Kansas City Kansas A public notice was published in the Hastings Tribune announcing the

beginning and length of the public comment period and the availability of the Proposed Plan and administrative record file The EPA also publicized the date of the public meeting to allow for questions and comments to be taken in Hastings The public meeting transcript records the comments and questions received by EPA Comments received during the public comment period are addressed in the Responsiveness Summary attached to this ROD Amendment as Attachment A

3 REASONS FOR ISSUING THE ROD AMENDMENT

While performing the work defined by the UAO which requires implementation of the Remedial Design and Remedial Action at the subsite Dravo requested that EPA approve Dravo s work plan to conduct an Air Sparging Test to determine if air sparging would be practicable as a ground water treatment technology After reviewing the test results Dravo requested that EPA amend the ROD to allow the use of air sparging

The EPA had been reviewing in situ treatment technologies on a national basis and had found that in many cases such technologies are preferable to pump and treat *because* they can speed up cleanups and reduce remediation costs Based on the testing performed by Dravo and the information available to EPA on in-situ treatment technologies the Agency concluded that implementation of in situ treatment technologies would have potential benefit at the Colorado Avenue subsite

4 DESCRIPTION OF THE ORIGINAL AND AMENDED REMEDIES

4 1 Description of the Original Remedy

The original remedy included the following major components

Installation of several ground water production wells (able to pump *a total of* approximately 300 gpm) and construction of a water treatment facility capable of removing the VOCs found at the subsite

Construction of the required facilities to allow for discharge or reuse of the treated water The ROD identifies reinjection as the preferred alternative However the ROD contains as optional provisions connection to the Hastings City Public Water Supply System or surface discharge

Operation of the remedial action systems including sampling and analysis to assure safety and effectiveness of the treatment processes

Maintenance of the remedial action equipment during the clean up activities at the subsite including proper handling and disposal of any waste generated

Periodic collection of ground water samples from the ground water monitoring wells to demonstrate progress during the clean up activities and presentation of analytical results to regulatory officials and

Annual long term ground water monitoring to assure that ROD goals continue to be met over a period of ten years after completion of water treatment activities at the subsite

4 2 Description o the New Alternative Remedies

The ROD amendment includes the addition of newer technologies for in situ treatment of the ground water and use of monitored natural attenuation to identify contaminant reductions in the ground water that may be due to the occurrence of natural processes The major components of the amended remedy include

Use of a new technology for in-situ treatment of the ground water specifically in-ground stripping which includes air sparging and in well aeration

Removal of stripped contaminants from the soil gas by a soil vapor extraction (SVE) system or from in-well stripping air by an in situ stripper The contaminated vapor will be properly treated before release and

Collection of ground water samples to help assess the effectivenes of the above actions and natural processes that may occur in the subsurface These natural processes have the potential for reducing the mass or concentration of contaminants in the ground water over time The use of sampling to determine which of these processes are active and at what rates the contaminants are being removed is called monitored natural attenuation (MNA) Reductive dechlorination or biodegredation is the chemical process by which mass is removed under MNA Other physical processes of MNA such as dilution adsorption dispersion and volatilization reduce contaminant concentrations

The in situ technology combined with MNA can be implemented to fully meet the remedial action objectives identified in the FS and the 1991 ROD These objectives included contaminant mass removal that reduces the overall

concentration of contaminants and controlling the most contaminated area of the plume to minimize the downgradient migration of the contaminants in the ground water Additionally air emissions will be controlled in such a way as to protect public health in areas surrounding the subsite Finally in-situ treatment will leave the ground water in place removing any need for discharging the treated water

4 3 Changes to the Treatment and ~~Disposal~~ *Treated Water Discharge* Options Included in the Original Remedy

The original remedy contained these options

Aboveground Air Stripping
Ultraviolet Photooxidation and
Release of treated water into the city s water distribution system

These option may not be required if the in situ treatment effectively achieves the clean up goals set forth in the ROD

5 SUMMARY OF COMPARATIVE EVALUATION OF ALTERNATIVES

The NCP sets forth nine evaluation criteria which serve as a basis for comparing the remedial alternatives for final actions The nine criteria are divided into three categories

Threshold Criteria
Primary Balancing Criteria and
Modifying Criteria

If any remecial alternatives identified during the ROD preparation process do not meet the Threshold Criteria (Criteria 1 overall protection of human health and the environment and 2 compliance with ARARs) EPA will not consider them as possible

interim remedies However because this is an interim remedy EPA will not eliminate an option that does not fully meet ARARs

If the alternatives satisfy the Threshold Criteria they are evaluated against the next five criteria called the Primary Balancing Criteria These criteria are used to compare the remedial alternatives against each other in terms of long-term effectiveness reduction of toxicity mobility and volume short-term effectiveness implementability and cost The final two criteria state acceptance and community acceptance are called Modifying Criteria The alternatives are compared against the Modifying Criteria after the state and community have reviewed and commented on he Proposed Plan and the other alternatives considered by EPA

The following is a discussion of the nine criteria used by EPA for remedy selection and information regarding how the criteria were applied to this ROD Amendment A discussion of the Threshold Criteria is presented in Sections 5 1 and 5 2 The Modifying Criteria are discussed in Sections 5 3 through 5 7 Finally the Modifying Criteria are discussed in Sections 5 8 and 5 9

Threshold Criteria

5 1 Overall Protection of Human Health and the Environment

The EPA assesses the degree to which the alternatives would eliminate reduce or control threats to public health and the environment through removal containment and/or institutional controls An alternative is normally considered to be protective of human health if the excess cancer risk is reduced to less than one case in 1 000 000 (also sometimes expressed as 10) and the contaminants do not pose non carcinogenic health risks (sometimes

expressed as Hazard Index [HI] is less than 1) Because the remedy for the Colorado Avenue Subsite Ground Water Operable Unit is identified as an interim action rather than a final action the measure to be used for comparison of alternatives has been set consistent with the NCP at the excess cancer risk level of 1 in 10 000 (or 10^{-4}) This 10^{-4} risk level corresponds to the interim action ground water goal of 290 μg/L for TCE

Based on the results of the risk assessment performed for the original ROD a potential for future exposure to contaminated ground water poses possible human health risks The degree of the possible risk can be reduced in several ways The original remedy selected by the 1991 ROD reduces the threat of adverse health effects from the contaminants by extracting the most contaminated ground water removing the contaminants from the water and then discharging the water The in situ technologies included in this amendment similarly protect human health The technologies will reduce the threat of exposure by removing the contaminants from the ground water shown to have the highest concentrations of contaminants The ground water will be treated in situ and discharge of treated water will not be necessary

In both cases the recovered VOC contaminants would be permanently destroyed thus preventing future human exposure The original remedial technologies are capable of minimizing further downgradient migration of contaminants in the ground water Application of the in ground stripping technology has the capability to reduce the concentrations of the VOC contaminants more rapidly than the original technologies The use of MNA will provide supplementary data regarding the fate of the contaminants in the ground water

The EPA and he NDEQ have reviewed the material supplied by Dravo and other published information These data indicate in-situ technologies are appropriate remedial alternatives for the Colorado Avenue subsite project In addition MNA will provide added assurances that areas of contamination which exceed clean-up goals (i e the area represented by the 290 µg/l TCE isoconcentration contour) will be identified and monitored as a part of the interim action

The pump and treat technology selected in the original ROD inhibits plume migration by modifying ground water flow patterns and contaminant migration pathways and removing contaminants within the capture zone of the wells VOCs may be removed from the extracted ground water using granular activated carbon treatment

The in situ technology selected through this amendment inhibits plume migration by removing VOCs from the ground water in the vicinity of the treatment wells This technology relies on natural ground water flow patterns to deliver contaminated ground water to the in situ treatment wells VOCs removed from the ground water are entrained in soil gas or in the air in the well The contaminated soil gas or well air will be captured and treated using activated carbon treatment MNA relies on physical chemical and biologic mechanisms to reduce the concentration of the untreated contaminants in the subsurface

In both alternatives VOCs are ultimately removed from the ground water and are destroyed Therefore both the original and amended technologies are protective of human health and the environment Although the *in situ* treatment wells may do less to contain the plume than the original remedy these technologies may remediate contaminated ground water more rapidly than the

original remedy In addition MNA will provide information to assess the effectiveness of these natural phenomena in reducing contaminant concentrations in areas of the plume that are unaffected by in situ technologies

5 2 Compliance with all Applicable or Relevant and Appropriate State And Federal Environmental Regulations

The EPA assesses whether the remedies will comply with all applicable or relevant and appropriate requirements (ARARs) established under Federal and State environmental or facility siting laws

Applicable requirements include clean up standards standards of control and other substantive environmental protection requirements criteria or limitations promulgated under State or Federal laws that specifically address the release or threat of release of a hazardous substance pollutant or contaminant including the location or other circumstances at a CERCLA site

If it is determined that a requirement is not applicable it may still be relevant and appropriate to the circumstances of the release Requirements are relevant and appropriate if they address problems or situations sufficiently similar to the circumstances of the release or remedial action contemplated and are technically well suited to the site environmental conditions

ARARs are grouped into three categories

Chemical specific ARARs are health- or risk-based numerical values or methodologies which when applied to site-specific conditions result in establishment of the amount or concentration *of a contaminant* that may be found in or discharged to the environment

Location Specific ARARs restrict the concentration of hazardous substances or the conduct of activities solely because the activities are in specific locations such as flood plains wetlands historic places and sensitive ecosystems or habitats

Action Specific ARARs are usually technology or activity based requirements or limitations on actions taken with respect to hazardous wastes

A comparison of the original pump and treat remedial alternative with the in-situ alternative indicates that both remedial technologies can provide a first step toward achieving chemical specific ARARs Because the original and alternate remedies are part of an interim action full compliance with all ARARs is not required Therefore attainment of the Safe Drinking Water Maximum Contaminant Levels (MCLs) for contaminants is not mandatory Neither remedy is designed to restore all ground water to drinking water standards This outcome is consistent with the NCP which does not require all ARARs be met for an interim action

The Federal and State action-specific ARARs include the Occupational Safety and Health Act and its regulations *29* U S C §§ *651 678* the Hazardous Materials Transportation Act and its

regulations *49 U S C §§ 5101 5127* and the Clean Water Act 33 U S C §§ 1251 1387 and its regulations including those applicable to discharges to Publicly Owned Treatment Works (POTWs)

Regulations promulgated under the Solid Waste Disposal Act as amended by the Resource Conservation and Recovery Act (RCRA) would only be considered applicable for waste materials which may be taken off-site Wastes generated during the performance of the remedial action are subject to the RCRA Land Ban regulations of 40 C F R Part 268 Typically such wastes are analyzed using the Toxicity Characteristic Leachate Procedure (TCLP) test RCRA regulations may be relevant and appropriate to the spent carbon that may be generated from the treatment of the air emission In addition RCRA regulations may be considered as relevant and appropriate for material which may be generated during construction such as wa te soil cuttings

In regard to compliance to air emission standards both the remedy in the existing ROD and the in-situ remedy incorporate treatment of air emissions and can comply with Nebraska air pollution rules cited in Table 5 of the ROD and Federal guidelines for air quality as established under the Clean Air Act 42 U S C §§ 7401 7642

The State of Nebraska promulgated laws and regulations which are listed in Table 5 of the 1991 ROD The references to the requirements of the Nebraska Safe Drinking Water Act that appear in Section III of Table 5 apply only to ground water which is pumped to the surface and therefore would not apply to the in-ground stripping technologies authorized by this ROD amendment

Unlike the pump and treat technology in situ technology will not result in surface water discharges therefore NDEQ

Title 117 Surface Water Quality Standards would not apply to in-situ treatment.

Nebraska regulations set forth in Title 118 Ground Water Quality Standards and Use Clarifications are ARARs because ground water contamination has been observed at the subsite As with the original ROD remediation of ground water contamination and long term monitoring will be addressed by the interim action and by future actions

Nebraska Title 129 governs Air Pollution Controls and Regulations and contains substantive requirements that are relevant and appropriate to the water treatment process including both aboveground air stripping and *in situ* treatments

There are no location specific ARARs

Primary Balancing Criteria

5 3 Long Term Effectiveness and Permanence

Long term effectiveness and permanence refers to the ability of a remedy to maintain reliable protection of human health and the environment after completion or in this case attainment of the interim action goals

Evidence indicates that the levels of contamination in several areas of the subsite potentially pose a current and/or future risk to human health or the environment The implementation of the amended remedy will result in a reduction in the risk in all areas where contamination was found to pose a risk through direct contact or inhalation

The amended remedy ncludes treatment of contaminants and engineering controls Both the pump and treat remedy and the in itu technologies rely on ground water monitoring to monitor that the selected remedy continues to provide effective long term risk reduction for human health and the environment

The ground water pump and treat remedy and the amended remedy which adds in-situ technologies as an option were evaluated to determine whether environmental and health risk would remain after the interim action is complete Risks will till remain after either the pump and treat remedy or the in-itu technologies are implemented However both are expected to remove substantial amounts of contaminant mass *from* within the 90 µg/l TCE isoconcentration contour By removing the contaminants both remedies decrease long term risks to human health and the environment As a result both remedies offer an acceptable degree of long-term effectiveness and permanence for an interim action

5 4 Reduction of Toxicity Mobility or Volume Through Treatment

Section 121(b) of CERCLA states that remedial actions involving treatment which permanently and significantly reduce the volume mobility or toxicity of the hazardous materials are to be preferred over those not involving such treatment This evaluation criteria relates to the ability of a remedial alternative to control or eliminate risks caused by the mobility toxicity or volume of ha ardous wastes

Both ground water pump and treat and the proposed in situ technologies would reduce the risks to human health and the environment by lowering the concentrations and volumes of VOCs in he ground water beneath the Subsite The estimated removal time

for in-ground stripping is significantly less than that for pump and treat However the in-ground stripping alternative would not be as effective in reducing plume mobility Toxicity would be indirectly reduced under both the original and amended remedies due to reductions in contaminant concentrations

5 5 Short-Term Effectiveness

Short term effectiveness evaluates the length of time needed to implement each segment of the alternatives The EPA considers the risks that a particular activity may pose to site worker nearby residents or the local environment Short-term effectiveness involves the period of time needed to achieve protection and considers any adverse impacts on human health and the environment that may be posed during the construction and implementation period until clean up goals are achieved

The EPA had estimated in the 1991 ROD that a pump and treat alternative would require 10 years to achieve the risk based criteria Depending on a number of variables related to design and implementation it is possible that less than 10 years would be required for pump and treat to achieve these criteria Bravo estimates the in situ technologies will achieve the ROD criteria within the zones of influence of the treatment wells in approximately two years While EPA has not independently verified this estimate there is general agreement that the in situ technologies will likely recover more contaminant mass than the pump and treat alternative during the early years of operation No estimates are available for the number of years required for MNA to achieve the ROD criteria but MNA is not being evaluated independently of the in-situ treatment technologies

5 6 Implementability

Implementability addresses the technical and administrative feasibility of a remedy including the availability of materials and services needed to implement the chosen solution The EPA considers how difficult the alternative is to construct and operate how other government agencies and EPA will coordinate monitoring programs and the availability of goods and services and personnel needed to implement and manage the alternative

Implementability of the two alternatives will be evaluated relative to 1) process equipment 2) waste streams and 3) operation and maintenance issues Each are discussed below

Process Equipment

The pump and treat alternative requires approximately three or four recovery wells to contain the plume an influent tank to provide surge capacity piping from the wells to the tank and from the tank to the carbon units and the carbon adsorbers It is anticipated that the treatment facility would be housed in a permanent building located near the ground water recovery wells The water would be discharged through pipes originating from the treatment system to a series of reinjection wells

The in-situ technologies will require less underground piping than the original remedy This difference is offset by the fact the in ground stripping and MNA requires more wells to treat the plume Initially Dravo proposes to install eight wells to treat the areas of highest concentrations in the ground water contaminant plume Additional treatment wells will be needed to address the other downgradient areas that exceed the 10 risk level

When in-situ technologies are implemented additional SVE wells may be required to recover the contaminated vapor The compressors used to inject the air below ground for the in situ technologies will be noisier than the submersible pumps associated with the pump and treat alternative However noise can be controlled by soundproofing

Waste Streams

A significant issue associated with the pump and treat alternative is the handling and reuse of treated ground water which is a valuable resource The pump and treat alternative envisions treated ground water being reinjected or made available to others for reuse However as of this date Dravo and the City of Hastings have not found a use for the treated water Reinjection would be costly to implement due to the State requirements designed to safeguard the quality of drinking water aquifers

The in situ technologies treat ground water without extraction and should therefore meet the concerns of the public that the ground water be cleaned up without dissipating a valuable resource

Operation and Maintenance

Decreasing levels of contaminants in the groundwater will cause the labor requirements for the pump and treat alternative and the in ground stripping alternative to decline over time Implementation of MNA will increase the project labor requirements In ground stripping with SVE and MNA alternative may require more labor hours during early years of the project However the operational time frame of the amended remedy is

expected to be shorter Due to the anticipated overall shorter project life as compared to the pump and treat alternative the net result should be less O & M effort

In general the submersible pumps associated with the pump and treat alternative are more reliable than the air compressors associated with in-ground stripping However because the pumps are located in the wells they would be more difficult to access if they did require repair

5 7 Cost

The EPA considers capital costs operation and maintenance (O&M) costs and present worth which is the cost of the activities that will take place until the remedial action is completed Capital costs apply to activities such as construction land and site development and disposal of waste materials generated during construction Annual operation and maintenance costs are spent on activities such as on going operation of equipment collection and analysis of samples and periodic site reviews

CERCLA requires that the EPA select a cost-effective alternative that protects human health and the environment and meets other legal and technical requirements The EPA has determined that the 1991 remedy and the newer in situ treatment technologies are equally protective of human health In addition the newer in situ treatment technologies are more cost effective Based on cost estimates prepared in 1991 the pump and treat selected alternative would have cost approximately $6 061 million over 10 years The 1991 cost estimate included approximately $3 million for capital and the balance to be spent on O&M for the estimated 10 years of pumping and treating the ground water

The O&M cost estimate contained in the ROD was taken from the FS and did not include costs associated with the long term ground water monitoring to be performed after completion of the water treatment activities The EPA estimated that an additional amount of approximately $150 000 would have been needed to perform 10 years of ground water monitoring after completion of the active treatment phase of the project

Although no project cost estimate was provided by Dravo the existing cost data for the 1991 ROD provides a useful baseline to evaluate the relative effects on project costs Cost savings can be realized in th capital and O&M phases of implementing the newer in-situ treatment technologies The capital cost to implement the amended remedy will be significantly less because an existing SVE system can be used and because of the ready availability of commercial equipment components needed to construct the in situ treatment units Because the in-situ treatment remedy will more rapidly remove contaminant mass less electrical power will be consumed over the life of the project contributing to lower overall O&M project costs Both remedies will have essentially the same costs associated with long term (10 years) ground wat r monitoring to confirm effectiveness of the cleanup

Overall the amended remedy is considered to be a more cost effective remedy while providing equivalent protection to human health and the environment

Modifying Criteria

5 8 State Acceptance

The NDEQ presented a statement at the Public Meeting in support of this ROD amendment This statement appears in the

meeting transcript The NDEQ s statement acknowledged the advantages presented by the in situ treatment technologies

5 9 Community Acceptance

The EPA held a public comment period to allow the community to comment on the Proposed Plan for ROD Amendment In addition the EPA held a public meeting to take comments and questions on the Proposed Plan The EPA prepared a Responsiveness Summary for the ROD Amendment which is attached to this document as Attachment A

In comparing the original remedy with the amended remedy the EPA has determined that the original pump and treat remedy and the amended remedy which adds in situ technologies as a remedial alternative both meet the threshold criteria overall protection of human health and the environment and compliance with Federal and State requirements

With respect to the primary balancing criteria the amended remedy presents the better balance of tradeoffs In particular short term effectiveness is better and costs are lower In addition the amended remedy maintains the statutory preferences for treatment and protectiveness of human health and the environment

With regard to the modifying criteria of state and community acceptance the technology identified by the ROD amendment is preferred In the tradeoffs and balancing of all nine criteria the in-situ remedy will comply with all requirements and is acceptable to the community and the State

6 STATUTORY DETERMINATIONS

The EPA has determined and the NDEQ concurs that the in situ remedial alternative for this limited scope action satisfies the statutory requirements specified in CERCLA Section 121 These requirements state that the selected remedy must protect human health and the environment comply with applicable or relevant and appropriate Federal and State requirements and be cost effective Although this interim action is not intended to fully addre s the statutory mandate for permanence and treatment to the maximum extent practicable (i e completely remediate the ground water for this subsite) this interim action utilizes treatment and thus is in furtherance of that statutory mandate

Because this interim action does not constitute the final remedy for the ground water operable unit the statutory preference for remedies that employ treatment and reduce toxicity mobility or volume as a principal element is only partially addressed This preference will be fully addressed by the final response action Subsequent actions are planned to fully address the threats posed by the conditions at this subsite Becau e this interim remedy will result in hazardous substances remaining on site above health based levels a review will be conducted to ensure that the remedy continues to provide adequate protection of human health and the environment within five years after the remedial action is started Review of this subsite and this remedy will be or going as EPA continues to develop final remedial alternatives for the subsite